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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/063,094	03/19/2002	Barry Lee-Mean Yang	RD-27190-2	8181

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EXAMINER

MEEKS, TIMOTHY HOWARD

ART UNIT PAPER NUMBER

1762

DATE MAILED: 05/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/063,094

Applicant(s)

YANG ET AL.

Examiner

Timothy H Meeks

Art Unit

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 24-35 and 37-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 24-35 and 37-40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 March 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/18/04 has been entered.

Application Status

The amendment filed 3/18/04 has been entered. Claims 1-23 and 36 were canceled and claims 24, 35, and 37-40 were amended. Claims 24-35 and 37-40 are pending.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 24-35 and 37-40 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In the independent claims, the scope of the term "with a larger area" is unclear as no basis for comparison is provided. What is the area larger than?

Claim 29 does not appear to further limit claim 24 because a set of expanding thermal plasma generating means is necessarily required to form the "set of at least two thermal plasma plumes" recited in claim 24.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 24-30, 32-35, and 37-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 887110 in view of Ackermann et al. (5,062,508).

The following limitations of claims 24, 35, and 37 are disclosed in EP 887110:

- "coating a polycarbonate substrate" (page 2, lines 45-46);
- providing an expanding thermal plasma means located outside and in fluid communication with a deposition chamber (figure 12);
- maintaining the expanding thermal plasma means at a pressure greater than the deposition chamber (inherently performed as the plasma generator is located outside the vacuum environment and has a much smaller volume than the chamber into which gas is injected for forming the plasma;
- providing at least one reagent to the plasma to form a coating (page 3),
- "generating".....a thermal plasma plume to produce a coating on the substrate (page 2, lines 33-55), and

- "said coatings being silica-based" and forming argon or argon-oxygen plasma (Table 1).

EP 887110 fails to explicitly disclose that multiple expanding thermal plasma plumes are generated with their central axes being parallel or being codirectionally oriented or moving the substrates past the plumes to deposit successive coatings but does disclose desirability to coat large area substrates and increase deposition rate (page 3, lines 1-5).

Ackermann et al. disclose that providing a plurality of plasma sources in parallel over a moving substrate is effective to increase the deposition rate (col. 8, lines 5-20 and Figure 3). Given the disclosure of EP 887110 of the desirability to increase deposition rate and the disclosure of Ackermann et al, that providing plural plasma sources in parallel affords the capability to increase the deposition rate, it would have been obvious to one of ordinary skill in the art to have provided plural expanded thermal plasma plumes in a parallel, coaxial arrangement so as to provide the ability to increase the deposition rate which would have the inherent advantage of increasing process throughput for coating substrates larger than that covered by a single expanding thermal plasma plume.

With respect to the added limitations of "with a larger area" and "perpendicular to a translation direction of the substrate", as established above, the term "with a larger area" has no context and therefore encompasses virtually any size area of substrate. The disclosure of Ackermann is to coating large area substrates (see abstract), therefore, this limitation is considered to be met. Also, as is clearly shown in the figures

of Ackermann, the plume emitted from the discharge devices is directed perpendicular to the direction the substrate traverses. Therefore, the added limitations do not differentiate from the prior art process.

The dependent claims are disclosed or suggested as follows:

- Claims 25-28 (page 1, lines 45-46 and Table 1 of EP 887110);
- Claims 29-30, 32-33, and 37-40 (col. 8, lines 5-20 and fig. 3 of Ackermann, the substrates will inherently be heated by the thermal plasma during coating and as required by claim 40 "at least one portion" of the substrate would inherently be heated uniformly in this process); and
- Claim 34 (page 2, lines 15-20 disclosing use of the polycarbonate substrates in glazing and optical applications which typically require curved substrates).

Claims 24-30, 32-35 and 37-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 887110 in view of Paquet (5,985,378).

The following limitations of claims 24, 35, and 37 are disclosed in EP 887110:

- "coating a polycarbonate substrate" (page 2, lines 45-46);
- providing an expanding thermal plasma means located outside and in fluid
- communication with a deposition chamber (figure 12);
- maintaining the expanding thermal plasma means at a pressure greater than the deposition chamber (inherently performed as the plasma generator is located outside the vacuum environment and has a much smaller volume than the chamber into which gas is injected for forming the plasma;

- providing at least one reagent to the plasma to form a coating (page 3),
- "generating".....a thermal plasma plume to produce a coating on the substrate (page 2,
- lines 33-55), and
- "said coatings being silica-based" and forming argon or argon-oxygen plasma (Table 1).

EP 887110 fails to explicitly disclose that multiple expanding thermal plasma plumes are generated with their central axes being parallel or being codirectionally oriented or moving the substrates past the plumes to deposit successive coatings but does disclose desirability to coat large area substrates and increase deposition rate (page 3, lines 1-5).

Paquet discloses a process wherein multiple plasma CVD sources are arranged in a planar, grid-like arrangement perpendicular to a traveling direction of a substrate (abstract, figures, col. 3, line 28 to col. 4, line 55). It is disclosed that such arrangement allows for coating large area substrates (col. 3, lines 35-36) and allows for adjustment of the coating region to fit the form and size of the substrate (col. 4, lines 30-40). It would have been obvious to one of ordinary skill in the art to have provided plural expanded thermal plasma plumes in a planar, grids-like arrangement formed perpendicular to a traveling direction of a substrate so as to provide the ability to coat substrates larger than that covered by a single expanding thermal plasma plume and to adjust the coating region to fit the form and size of the substrate.

The dependent claims are disclosed or suggested as follows:

- Claims 25-28 (page 1, lines 45-46 and Table 1 of EP 887110);
- Claim 31, Paquet discloses arranging plasma sources to adjust the coating region to conform to the form and size of the substrate (col. 4, lines 35-40) which would be inclusive of arranging the sets of plasma sources to coat more than one side of the substrate;
- Claims 29-30, 32-33, and 37-40 (the above-cited sections of Paquet, the substrates will inherently be heated by the thermal plasma during coating and as required by claim 40 "at least one portion" of the substrate would inherently be heated uniformly in this process); and
- Claim 34 (page 2, lines 15-20 disclosing use of the polycarbonate substrates in glazing and optical applications which typically require curved substrates).

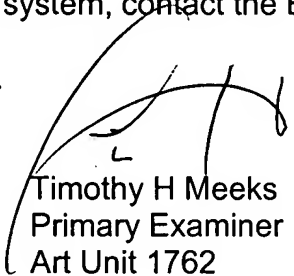
Response to Arguments

Applicant's arguments with respect to the added limitations have been considered but are moot in view of the new ground(s) of rejection. The arguments with respect to Ackermann are addressed in the rejection above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy H Meeks whose telephone number is 571-272-1423. The examiner can normally be reached on Mon, Tues, Wed, 6-6:30, Fri. 6-10.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on 571-272-1415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Timothy H Meeks
Primary Examiner
Art Unit 1762